REMARKS

It is noted, with appreciation, that the Examiner has indicated that claims 2 and 3 are allowable over the prior art of record for the reasons set forth in paragraph 3 of the Examiner's Office Action.

Claims 1 and 4-7 have been objected by the Examiner under 35 U.S.C. § 102(b) as being anticipated by Simons, EP 013453. This rejection is respectfully traversed.

In the printhead of an inkjet printer, it is not possible to completely prevent the actuation of a piezo-electric transducer of a first duct from also having an influence on other ducts, particularly a neighboring duct. Thus, the actuation of a piezo-electric transducer causes the transducer to expand so that mechanical forces are transmitted to a carrier member. Since the carrier member is, in turn, connected to the piezo-electric transducers of the other ducts, these forces are transmitted to these transducers. The mechanical actuation of these transducers result in a pressure change in the other ducts, and this pressure change is particularly noticeable in neighboring ink ducts. The result of this pressure change is that the drop ejection process in another duct of this kind is adversely influenced. This adverse influence is called cross-talk and may be manifested in a deviant drop size, drop speed, ejection time and the like. Such deviations will finally result in print irregularities which are visible in varying degrees depending upon the nature of the deviation.

The present invention deals with the problem of cross-talk. Instead of trying to prevent it mechanically, the present invention deals with accurately measuring the cross-talk effect so that it can be properly taken into account during the printing process. To be able to adequately measure the effect of cross-talk, the transducer of a first ink channel is actuated, thereby causing a relatively large pressure change in this first duct, but also causing some amount of pressure change in a second duct (commonly known as the cross-talk effect). The pressure change in the second duct leads to some deformation of the transducer that is connected to that second duct (see paragraph 7, first three lines). The present invention now uses this transducer as a sensor to measure the particular pressure change (see paragraph 7, page 4, first two lines). Thus, according to the present invention, the signal generated by a transducer operatively connected to a second channel is measured in response to the actuation of the transducer of the first channel. In this manner, clear information as to the degree of the cross-talk is generated (see paragraph 7, lines 5-8). This concept is exemplified in more detail in connection with Fig. 3, and in particular paragraph 28, where it is explained that transducer 26 of the first channel is firstly actuated, which also causes a pressure change in a neighboring duct (the cross-talk effect). This actuation is followed by measuring the electrical signal generated by the transducer 26' of the neighboring channel as a result of the pressure change. It is clear that the measurement of the signal generated by the transducer operatively connected

to the second channel is in response to the actuation of the transducer of the first channel. In other words, the measurement of the electrical signal caused by the deformation of the transducer of the second duct is actually in response to the actuation of the transducer of the first duct. Thus, the present invention, as specifically recited in independent claims 1 and 5 of the present application, makes it possible to clearly and unambiguously measure the cross-talk effect in neighboring ink ducts although said cross-talk effect may be relatively small.

In contrast to the teachings of the present invention, the Simons et al. reference, EP 1,013,453 clearly teaches that the trigger for measuring the electrical signal generated by a transducer of a duct is the actuation of the same transducer of the same duct. Thus, as described with reference to Fig. 3 (column 4, lines 16-33), first a pulse is generated across the piezo element 2. Add to the generation of the pulse, a changeover switch 8 is switched so as to close the measuring circuit. It is only then that the electrical signal as generated by the piezo element upon its deformation can be measured. Thus, measuring the electrical signal generated by a certain transducer is always triggered by the preceding actuation of that same transducer. Thus, upon measuring the electrical signal according to the Simons reference, even if the pressure change in the ink channel is influenced by cross-talk, the main part of the pressure change is caused by the actuation of the transducer of the channel itself. Thus, the main part of the measured electrical signal is due to

the actuation of the channel itself and not due to cross-talk. Accordingly, by following the teachings of the Simons reference it would be very difficult to obtain clear and unambiguous information with respect to cross-talk. Accordingly, since the Simons reference does not disclose or suggest a method wherein the measuring of the signal generated as a result of the pressure change in a second duct is in response to the actuation of the electrical mechanical transducer of the first duct, it is believed that the prior art reference relied upon by the Examiner does not suggest the present invention.

Claims 1, 5, and 7 have been rejected by the Examiner under 35 U.S.C. § 103(a) as being unpatentable over Rogers et al., U.S. Patent No. 5,966,148, in view of Simons. This rejection is respectfully traversed.

The Rogers patent also fails to show a method and system wherein the measuring of a signal generated as a result of a pressure change in a second duct is in response to actuating the electro-mechanical transducer of the first duct. Therefore, since neither of the references relied upon by the Examiner teach the Applicants' inventive contribution, the combination of the Rogers and Simons references would still not lead one skilled in the art to the Applicants' inventive contribution. Since both claims 1 and 5 are considered to define patentable subject matter over the prior art relied upon by the Examiner, for the same reasons it is also believed that claims 2-4, 6, and 7 which are dependent from claims 1 and 5 are also patentable over the prior art relied upon by the Examiner.

Accordingly, in view of the above amendments and remarks, reconsideration of the rejections and allowance of the claims of the present application are respectfully requested.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Mr. Joseph A. Kolasch (Reg. No. 22,463) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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